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Aphid species (Hemiptera: Aphididae) new in the fauna of the Eastern Beskid Mountains (southern Poland)

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Abstract: Fifteen aphid species were found in the Eastern Beskid Mountains for the first time during the short faunistic study. Currently, 119 aphid species are recorded from this region, which may still constitute only a fraction of the fauna of neighboring regions and testify to an insufficient faunistic study on aphids.

Key words: faunistics, new records, aphids, zoogeography, Poland

INTRODUCTION

Aphididae belong to the order Hemiptera, suborder Sternorrhyncha, which apart from aphids includes various insect groups that are sap-sucking phytophages (Osiadacz & Hałaj 2009). Aphids, contrary to most of other insects, are a group reaching its highest species diversity in the zone of moderate climates. Poland is among the best studied European countries in terms of aphid fauna, with 766 recorded aphid taxa (Wojciechowski et al. 2015, Kanturski et al. 2017). However, particular regions of Poland are still unevenly studied (Osiadacz & Hałaj 2009). The region of the Eastern Beskid Mountains still is far from being satisfactorily investigated, despite intensive research of Hemiptera in the last decade (e.g. Taszakowski 2012, Taszakowski et al. 2015b, Taszakowski & Gorczyca 2018) aphids were not included in these investigations. So far, only 104 aphid species have been known from this area (Osiadacz & Hałaj 2009, Depa & Mróz 2013, Depa et al. 2017, Kanturski et al. 2017), of which 96 were not confirmed by any studies since the Catalogue was issued (Szelegiewicz 1968). This is very low number taking into account the large area and high habitat diversity of the Eastern Beskid Mountains. The presence of arable fields, natural forests (Magurski National Park) and farmlands and the proximity of the low trans-Carpathian passes (as a potential pathway for migration of thermophilous species) (Taszakowski & Gorczyca 2018) can have a major impact on the formation of aphid fauna in this area. The low intensity of aphidological research in this area contributed to the low number of species found so far in this region (Osiadacz & Hałaj 2009). This paper presents the results of the research project conducted in 2013 in the Eastern Beskid Mountains by members of the Student's Scientific Association "Faunatycy" aiming at complement faunistic data concerning aphid species of this area of Poland.

STUDY AREA AND METHODS

The studies were conducted from 9 to 12 July 2013 in the small town of Bartne (community: Sękowa, county: Gorlicki). In terms of physical-geographical division of Poland this locality is situated in the mesoregion of the Low Beskids (Kondracki 2013) and the zoogeographical region of the Eastern Beskid Mountains (Burakowski et al. 1973). Many

orchards with the fruit trees of this village over time have lost their anthropogenic character, thus creating a perfect place for the development of aphids.

Aphids were collected by method of detailed searching of whole plants. A few samples were collected using entomological net. The total number of 35 aphid samples from 15 plant genera was collected. The specimens were preserved in a 70% ethanol solution. After mounting on microscopic slide with method described by Kanturski & Wieczorek (2012) the specimens were identified using keys by Blackman & Eastop (1994, 2006, 2017), Wojciechowski (2003), Wojciechowski et al. (2016) and Heie (1980, 1982, 1986, 1992, 1994, 1995). Systematic order was applied according to Remaudière & Remaudière 1997. The collected material is deposited in the entomological collection of the Department of Zoology, University of Silesia in Katowice.

RESULTS

Twenty two aphid species have been recorded in the present study (Table 1). Among the collected species, 15 are recorded in the Eastern Beskid Mountains for the first time. The presence of 7 other recorded species is confirmed for the first time in this region in over fifty years (Szelegiewicz 1968).

Table 1. The list of aphids found in the Eastern Beskids during the study; the species recorded for the first time in the region are marked with an asterisk (*), two asterisks (**) mark the first confirmation after 1968.

No.	Aphididae	Plant	Date / Remarks
	Aphidinae		
	Aphidini		
1.	*Aphis acetosae* Linnaeus, 1761 *	*Rumex* sp.	11 Jul 2013
2.	*Aphis confusa* Walker, 1849 *	*Knautia* sp.	09 Jul 2013
3.	*Aphis craccae* Linnaeus, 1758 *	*Vicia* sp.	10 Jul 2013
4.	*Aphis farinosa* Gmelin, 1790 **	*Salix caprea*	11 Jul 2013
5.	*Aphis urticata* Gmelin, 1790 **	*Urtica dioica*	12 Jul 2013
	Macrosiphini		
6.	*Dysaphis newskyi aizenbergi* (Shaposhnikov, 1949) *	*Heracleum* sp.	12 Jul 2013
7.	*Macrosiphum funestum* (Macchiati, 1885) *	*Rubus caesius*	10 Jul 2013
8.	*Sitobion avenae* (Fabricius, 1775) *		09 Jul 2013 / pasture, cought in the entomological net
9.	*Uroleucon aeneum* (Hille Ris Lambers, 1939) *	*Centaurea* jacea	12 Jul 2013
10.	*Uroleucon hypochoeridis* (Fabricius, 1779)**	*Hieracium* sp.	09 Jul 2013
11.	*Uroleucon leontodontis* (Hille Ris Lambers, 1939) *		09 Jul 2013 / pasture, cought in the entomological net
12.	*Uroleucon murale* (Buckton, 1876) **	*Mycelis muralis*	10 Jul 2013
	Lachninae		
	Eulachnini		
13.	*Cinara cuneomaculata* (Del Guercio, 1909) *	*Larix decidua*	10 Jul 2013
14.	*Cinara laricis* (Hartig, 1839) *	*Larix decidua*	10 Jul 2013
15.	*Cinara pini* (Linnaeus, 1758) **	*Pinus sylvestris*	09 Jul 2013
	Lachnini		
16.	*Trama troglodytes* (Koch, 1857) *	roots of *Artemisia vulgaris*	09 Jul 2013
	Calaphidinae		
17.	*Euceraphis punctipennis* (Zetterstedt 1828) *		09 Jul 2013 / cought in the entomological net
18.	*Monaphis antennata* (Kaltenbach, 1843) **		09 Jul 2013 / cought in the entomological net
19.	*Myzocallis coryli* (Goeze, 1778)*	*Corylus avellana*	09 Jul 2013
20.	*Symydobius oblongus* (Heyden C.H.G., 1837) **	*Betula pendula*	09 Jul 2013

Table 1 continued on the next page

Continuation of the Table 1

No.	Aphididae	Plant	Date / Remarks
	Phyllaphidinae		
21.	*Phyllaphis fagi* (Linnaeus, 1767)*	*Mycelis* sp. ([1])	10 Jul 2013 /
	Thelaxinae		
22.	*Glyphina betulae* (Linnaeus, 1758)*	*Betula* sp.	09 Jul 2013

([1]) – The collection of *Phyllaphis fagi* on *Mycelis* sp. concerns a late female, therefore it is only a random collection and no new host plant associations were recorded.

DISCUSSION

Currently, the total number of aphid species recorded in this area is 119. This is very low number comparing to other zoogeographical regions of Poland. For example neighboring regions of Sandomierz Lowland, Bieszczady Mountains or Western Beskidy Mountains score ca. 200–250 species of aphids (Osiadacz & Hałaj 2009). This data illustrates how neglected is the region of the Eastern Beskid Mountains in terms of faunistic research on aphids. Recent considerations of the potential migration routes of thermophilous hemipterans through trans-Carpathian montane passages (e.g. Taszakowski 2012, Taszakowski et al. 2015a, Taszakowski & Gorczyca 2018) indicate the importance of this area in development of Polish fauna, including aphids (Kanturski et al. 2017). Further studies should definitely reveal much higher number of aphid taxa in this region. Our cautious estimation indicate that there are at least 100 more species of aphids in this region. With high variety of habitats, good preservation of natural ones, relatively low human activity and longitudinal montane passages the area of the Eastern Beskid Mountains (especially the Low Beskid Mts.) should become the most intensively studied regions in the coming years by us.

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STRESZCZENIE

[Mszyce (Hemiptera: Aphididae) nowe w faunie Beskidu Wschodniego (południowa Polska)]

Podczas krótkich badań faunistycznych w Beskidzie Wschodnim w lipcu 2013 znaleziono 22 gatunki mszyc, z których 15 gatunków okazał o się być stwierdzonymi po raz pierwszy w tym regionie Polski. Do tej pory z Beskidu Wschodniego wykazane były tylko 104 gatunki. W chwili obecnej z tego rejonu znanych jest 119 gatunków mszyc, co według szacunku autorów jest najwyżej połową liczby gatunków stwierdzonych w sąsiednich regionach, świadcząc o bardzo nierównomiernym zbadaniu fauny mszyc na terenie południowej Polski.

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